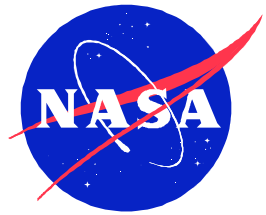


HOW DO WE REMAIN US IN A TIME OF CHANGE? CULTURE AND KNOWLEDGE MANAGEMENT AT NASA

Charlotte Linde,
NASA Ames Research Center

Talk Presented at Los Alamos National Laboratory, May 19, 2003

Culture & Knowledge Management

- Culture is often cited as a major problem for knowledge management
- Two types of cultural issues:
  - "The truth is out there somewhere." That is, necessary knowledge exists somewhere within the Agency, but the people who need it don't know how to find it, or the owners of the knowledge are unwilling to share it.
  - "People are walking out the door and taking their knowledge with them." That is, people are retiring, or leaving for other jobs. Somehow, we have to find a way to extract the knowledge from their heads before they leave.

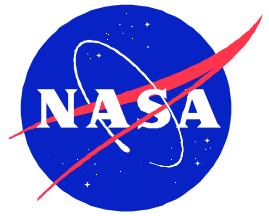
What Does NASA Mean by "Culture"?

- Culture is a hard problem: Even the experts can't define it
- NASA's ethno-definition:
  - Culture is the soft stuff
  - Culture is separate from structure - the sum of the legal, administrative and bureaucratic regulations that define the working environment

Culture Change is Not Free

- Structural issues are not natural facts
  - They can be changed (with difficulty)
- Can't ask for new behaviors while leaving working conditions unchanged
- There are attempts at structural changes which would also change the culture
  - Freedom to Manage Initiative
  - Attempts to change contract of Space Flight Operations

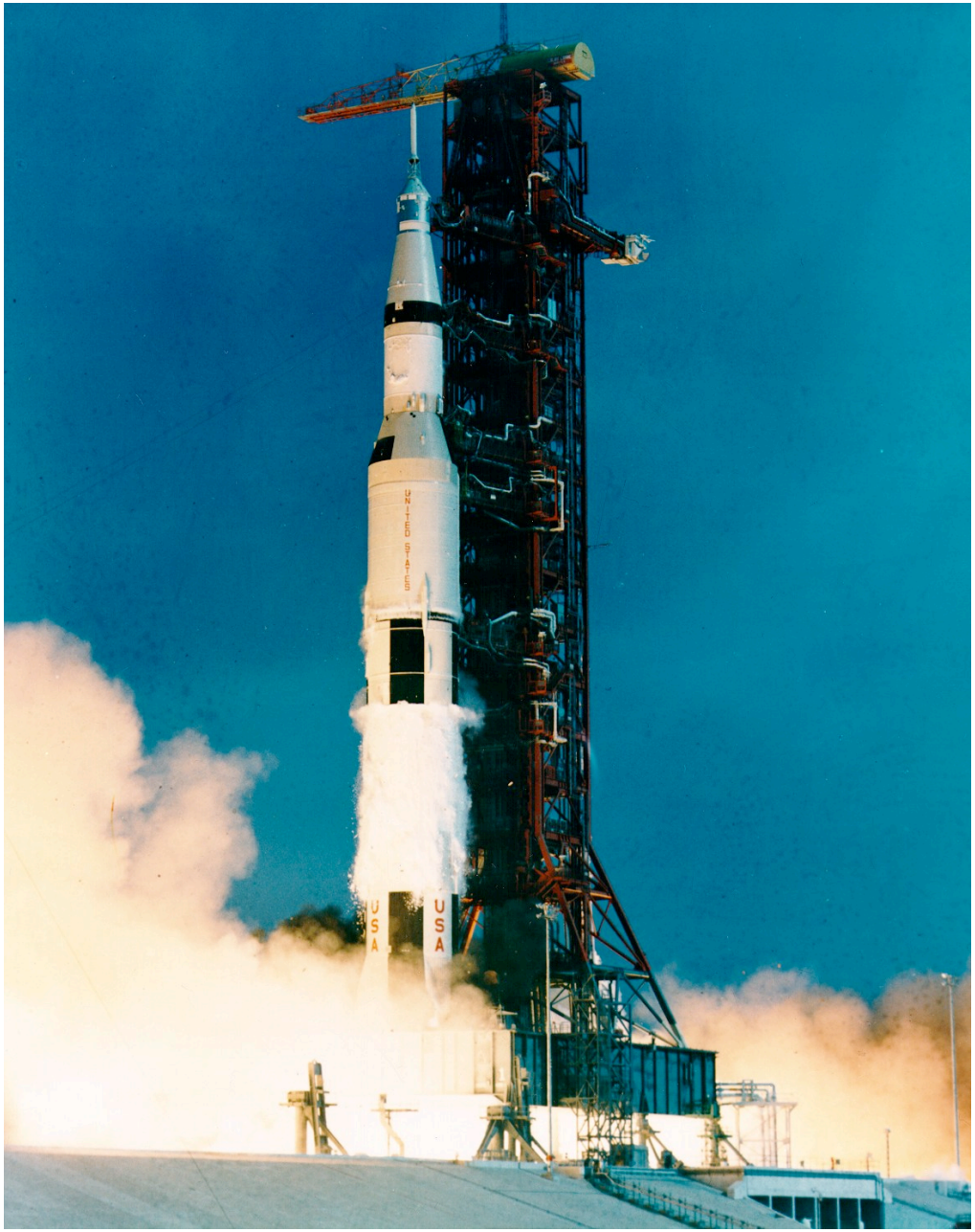
Culture and Social Reproduction



- Which needs to be explained: stability or change?
- Stability is not a given, it is an achievement
  - What are the mechanisms by which a social group reproduces itself from generation to generation

What must NASA know in order to remain NASA?

- NASA could not today reproduce the Apollo moon missions.
- We wouldn't want to
  - Technology has changed so much we would do it differently today
- But if we couldn't do a manned moon mission, we would no longer be NASA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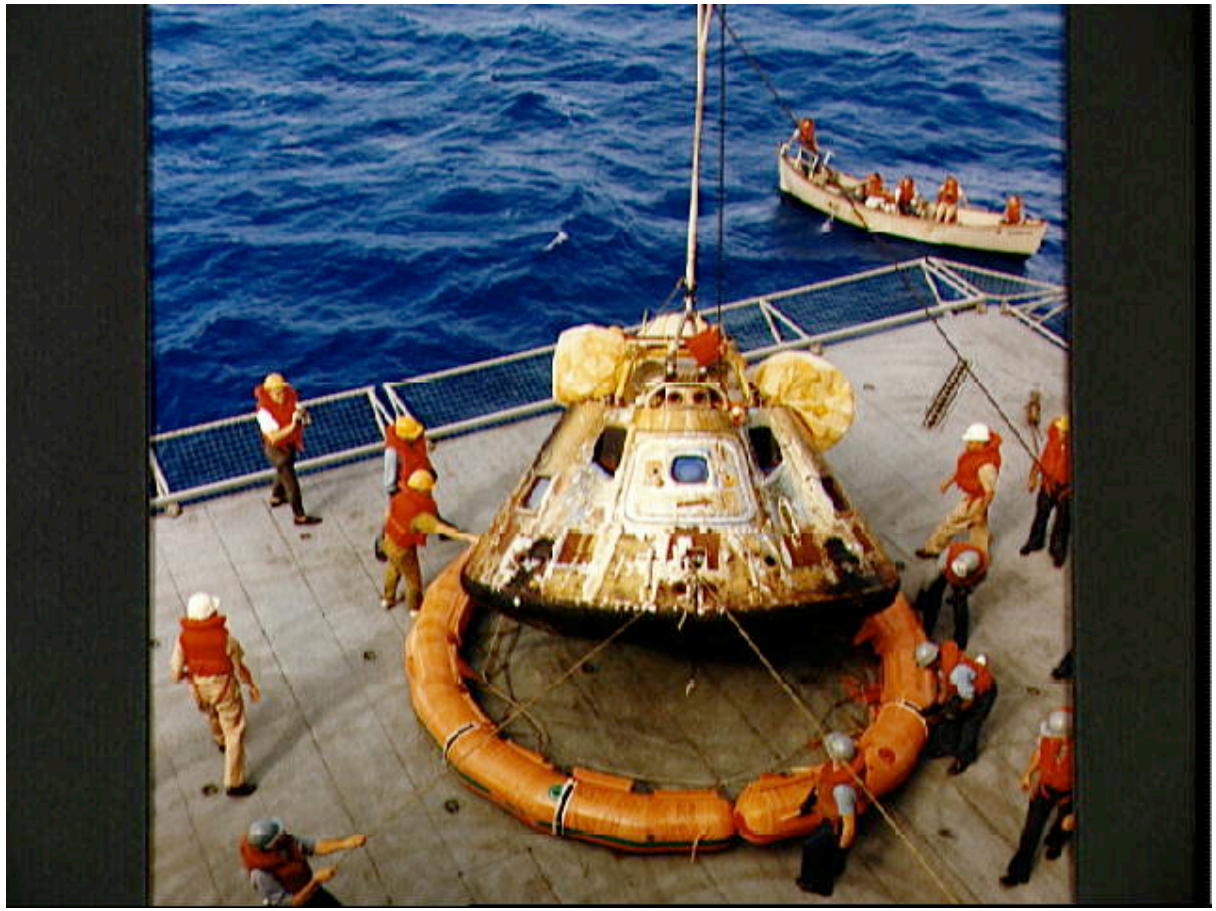

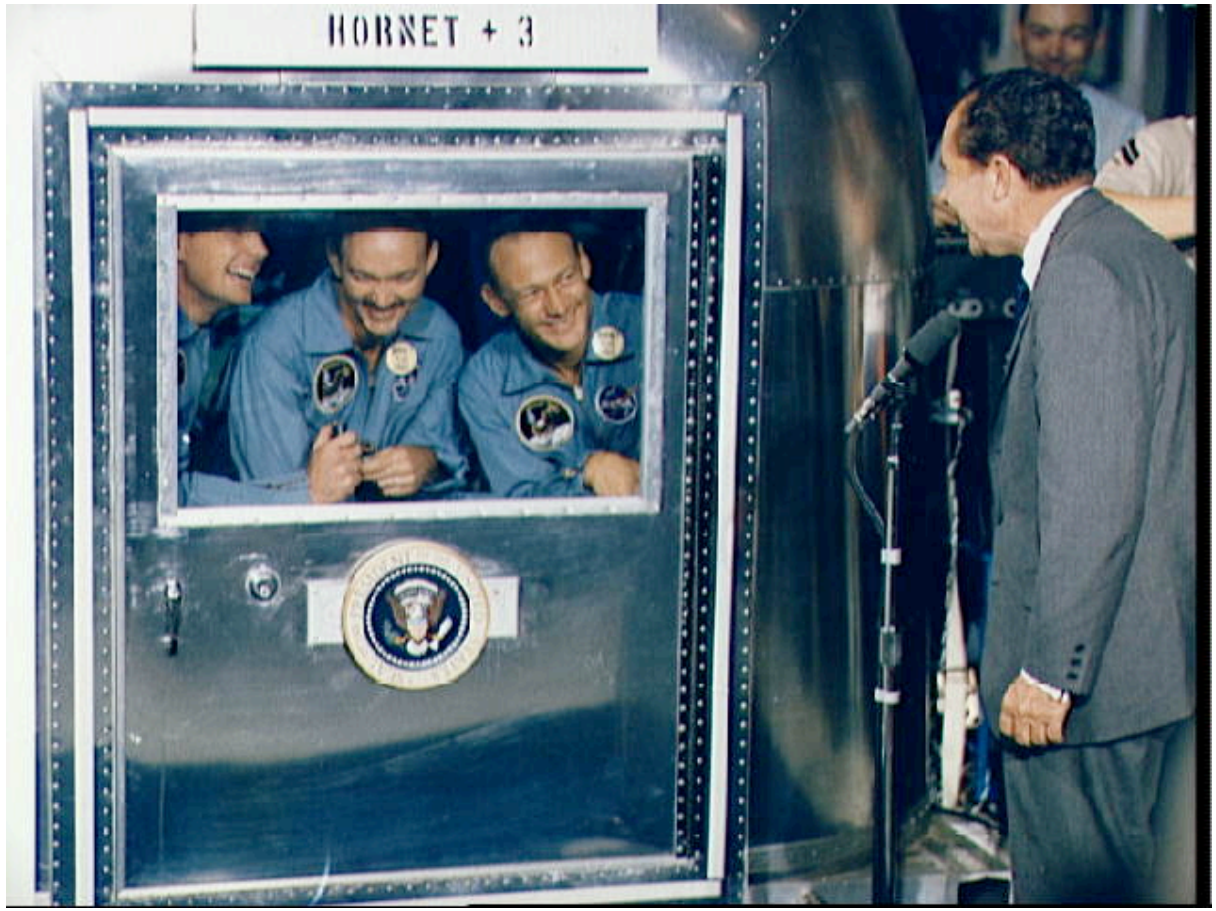
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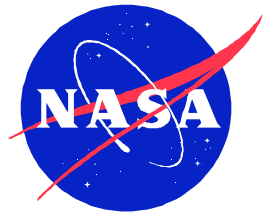
Specific Issues in NASA's Culture of Knowledge

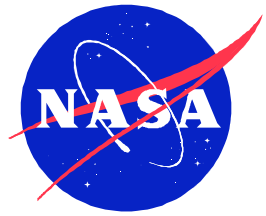
- Issues highlighted by Agency-wide Knowledge Management Team:
  - NASA must move from being a knowledge hoarding culture to a knowledge sharing culture
  - NASA must move from being center focused to being Agency focused
  - NASA must capture the knowledge of a departing workforce

Does Knowledge REALLY Want to Be Free?



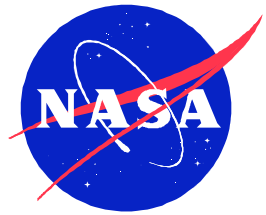
- Spectrum of type of information sharing
  - Free goods: the time, the way to the post office
  - Knowledge shared within a small work team
  - Knowledge protected by patent or copyright
  - Knowledge which must NOT be shared: sharing blocked by security regulations or ITAR

Knowledge Sharing and Social Relations: What Kind of Advantage Does It Convey?



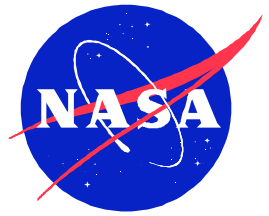
- Bare humanity: the time, the fact that the building is on fire
- Knowledge which takes time cost to share
  - Will be shared to strengthen social network
- Knowledge which possessor believes to convey a competitive advantage
- Knowledge which may only be shared with specified individuals

Knowledge Sharing and Physical Space



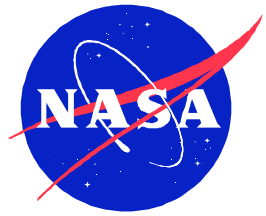
- Physical proximity facilitates knowledge sharing
- Raises a problem for distributed teams

Knowledge and Organizational Space



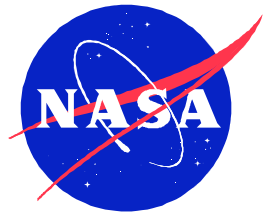
- Assumption of strictly hierarchical tree structured organization
  - Information travels up the tree
  - Policy and decisions travel down
- Innovation comes from boundary crossers
  - Who are the vines that move across the branches?

Knowledge & Organizational Space (cont)



- Not all kinds of information travel equally well up the tree
  - Bad news does not move upwards easily
- Representation of work becomes successively more abstract as it moves up the hierarchy

Research Directions



- What must NASA know to remain NASA? And forget in order to progress?
- What were the earlier mechanisms knowledge reproduction? What were their problems?
- Have changes in funding, relation between NASA and contractors and other changes changed earlier mechanisms of reproduction?
- Are there gaps in the mechanisms of social reproduction which must be remedied?
- What mechanisms exist for lateral movement of knowledge? Do they need to be strengthened?
- What change efforts are underway to remedy any of these gaps?